HYDRO-ELECTRIC INQUIRY COMMISSION

ENGINEERING DATA

THE QUEENSTON-CHIPPAWA POWER DEVELOPMENT

CHAPTER "H"—CONSTRUCTION PLANT

TRANSPORTATION

WALTER J. FRANCIS & COMPANY

CONSULTING ENGINEERS

Chapter H.

CONSTRUCTION PLANT

(Transportation)

Walter J. Francis.

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LIST OF ILLUSTRATIONS

Transportation

Chapter H.

CONSTRUCTION PLANT

Walter J. Francis.

The first part of Chapter H, describing the construction plant of the Hydro-Electric Power Commission as used on the Queenston-Chippawa Power Development, was devoted to the subject of the plant for concrete and reinforced concrete construction. This part, the second of Chapter H, deals with the broad subject of transportation, transportation equipment and disposal areas. There are two other parts, called part 3 and part 4, the former of which, part 3, deals with earth and rock excavation in the Canal, while part 4 deals with a similar subject in relation to the Intake, the Welland River, the Forebay, the Power House and the Tail-race.

TRANSPORTATION.

Transportation Generally.

The transportation of men and material within the district of the Queenston-Chippawa Power Development, which includes an area, say, fourteen miles in length by three miles in width, was accomplished by three principal systems; namely: by automobiles, by water, and by a railway system. Speaking generally

the automobile system was used by the engineers in conducting the work and for the purpose of distributing stores and merchandise over the works, conveying repair gangs to and from shops to the various major machines where they were needed, delivering goods from the works to the railway stations and vice versa, fire service, ambulance service, and similar instances.

The water transportation was confined to the works on the Niagara River, the Intake and the Welland River, and is dealt with in part 4 of this Chapter.

The construction railway system was used for handling all material excavated in the dry and for the delivery of carload lots or train lots of construction material, construction plant and permanent machinery.

No horse-drawn vehicles were used in connection with the work, with the exception of a few waggons in the earlier stages. The greatest number of horses the Hydro-Electric Power Commission had on the work was fifteen teams. A few horses were kept for the occasional supply of water for boilers, and for odd jobs in the yards where they were more economical and more convenient than other means of traction. A limited number of teams were hired in the early construction periods for such work as clearing the right-of-way.

AUTOMOBILES.

Number and Class of Cars.

The automobiles used for transportation consisted of cars of two principal types, the first being a small runabout car carrying the driver and one

passenger and the other class was of the lorry type. The first class of car was used by the engineering staff and by the construction superintendents. The lorries were principally equipped for carrying heavy materials, some of them having a capacity of 9 tons, and a small number were arranged with side seats for carrying numbers of workmen after the manner of an omnibus. In addition there were some special cars such as ambulances and a hose waggon for the fire brigade. There were also six tractors.

The fleet commenced with a small number of cars for the engineers, and was increased as the demand arose. The maximum number of cars in use was during the period of 1921.

The small runabout car being unsuited to the purpose of Mr. Acres, he supplied his own seven-passenger touring car which he used throughout the period, being allowed nominal mileage therefor, and being charged with all gasoline and repairs while used on the work.

The number of trucks or lorries in service during the construction years is as follows:

Year	Number	Year	Number
1917	13	1920	42
1918	19	1921	55
1919	34		

The disposition of the trucks at this date is as follows:

In service	23	
Being repaired	6	
In salvage	7	
Sold	16	
Transferred to Toronto Garage	3	55

The following table gives the principal data with reference to the cars in the fleet.

COPY

COPY FOR ENCLOSURE TO MR. J. ALLAN HOSE

WALTER J. FRANCIS & COMPANY.

COPY FOR ENCLOSURE TO Mr. J. Allan Ross.

Motor Trucks

No.	Make	Capacity	Order No.	Date of Purchase	Service
1	White	4-ton	837	Sept. 1917	Hauling rock, etc.
2	White	4-ton	837	Sept. 1917	Used with Trailer No.236 for hauling poles and lumber
15	Packard	1½-ton	1783	April,1917	General cartage
16	Packard	1½-ton	1783	April,1917	General cartage
17	Packard	1½-ton	1783	April,1917	General cartage
18	Packard	1½-ton	1783	April,1917	General cartage
28	Packard	1½-ton	2042	July, 1917	General cartage
29	Packard	1½-ton	2042	July, 1917	General cartage
30	Packard	1½-ton	1783	July, 1917	General cartage
31	Packard	1½-ton	2042	July, 1917	General cartage
35	Packard	2-ton	1783	July, 1917	General cartage
36	Packard	2-ton	1783	July, 1917	General cartage
42	Reo	3/4-ton	2105	July, 1917	Garage service truck
45	Packard	1½-ton	3175	April,1918	Passenger service
46	Packard	2-ton	3175	April,1918	General cartage
48	Packard	3-ton	3232	April,1918	Loose material
49	Packard	3-ton	3232	April,1918	Loose material
203	Reo	3/4-ton	3230	April,1918	Electrical operating
235	Packard	4-ton	3999	Oct. 1918	Loose material
238	Reo	3/4-ton	4853	July, 1919	General cartage
241	Reo	3/4-ton	4940	Sept. 1919	General cartage
243	Reo	3/4-ton	4940	Dec. 1919	General cartage
245	Reo	3/4-ton	5214	Dec. 1919	Shovel service
247	Reo	3/4-ton	5214	Dec. 1919	Stores Department
248	Reo	3/4-ton	5214	Dec. 1919	Lundys Lane Detour Pass.
249	Reo	3/4-ton	5214	Dec. 1919	General cartage
251	Reo	3/4-ton	5214	Dec. 1919	General cartage
252	Reo	3/4-ton	5214	Dec. 1919	General cartage
253	Reo	3/4-ton	5214	Dec. 1919	General cartage
254	Reo	3/4-ton	5214	Dec. 1919	General cartage
255	Packard	2-ton	5275	Dec. 1919	General cartage
256	Packard	1½-ton	5275	Feb. 1920	Power House construction
257	Packard	1½-ton	5275	Jan. 1920	General cartage
263	Reo	1½-ton	937	Oct. 1920	Engineers Division 3
264	Reo	1½-ton	937	Oct. 1920	Lundys Lane Detour Pass.
265	Reo	1½-ton	937	Oct. 1920	General cartage
266	Reo	1½-ton	937	Oct. 1920	Engineers Division 2
267	Reo	1½-ton	937	Oct. 1920	General cartage
269	Reo	1½-ton	1289	Nov. 1920	General cartage

for General Service

Time in Service From	To	Remarks
.. Sept. 1917	- March,1923	Still in service.
.. Sept. 1917	- March,1923	Still in service.
.. April,1917	- Nov. 1921	Sold.
.. April,1917	- Dec. 1921	Transferred to Toronto Garage.
.. April,1917	- Nov. 1921	Sold.
.. April,1917	- Dec. 1921	Transferred to Toronto Garage.
.. July, 1917	- Dec. 1921	Wrecked (to be rebuilt).
.. July, 1917	- Nov. 1921	Sold.
.. July, 1917	- Nov. 1921	Sold.
.. July, 1917	- Nov. 1921	Sold.
.. July, 1917	- Nov. 1921	Sold.
.. July, 1917	- Nov. 1921	Sold.
.. July, 1917	- Feb. 1922	Wrecked (to be rebuilt).
.. April,1918	- March,1923	Still in service.
.. April,1918	- Nov. 1921	Sold.
.. April,1918	- March,1923	Still in service - (dump truck).
.. April,1918	- Oct. 1921	Wrecked (to be rebuilt).
.. April,1918	- Jan. 1922	Sold.
.. Oct. 1918	- April,1922	Sold - (dump truck).
.. July, 1919	- Dec. 1921	Sold.
.. Sept. 1919	- Nov. 1921	Transferred to Toronto Garage.
.. Dec. 1919	- Nov. 1921	Salvage Department.
.. Dec. 1919	- Dec. 1921	Sold.
. Dec. 1919	- Feb. 1922	Sold.
.. Dec. 1919	- Jan. 1923	Still in service. At Garage.
. Dec. 1919	- Nov. 1921	Salvage Department.
. Dec. 1919	- March,1923	Still in service.
.. Dec. 1919	- March,1923	Still in service - (spare).
.. Dec. 1919	- June, 1922	Salvage Department.
. Dec. 1919	- March,1923	Still in service.
. Dec. 1919	- Nov. 1922	Salvage Department.
. Feb. 1920	- March,1923	Still in service.
. Jan. 1920	- March,1923	Still in service.
. Oct. 1920	- March,1923	Still in service.
. Oct. 1920	- Feb. 1923	Undergoing overhauling.
. Oct. 1920	- Jan. 1922	Being rebuilt.
. Oct. 1920	- March,1923	Still in service.
. Oct. 1920	- March,1923	Still in service - (nights).
. Nov. 1920	- Dec. 1922	Being rebuilt. (Insurance Account).

WALTER J. FRANCIS & COMPANY.

COPY FOR ENCLOSURE TO Mr. J. Allan Ross.

Motor Trucks for

No.	Make	Capacity	Order No.	Date of Purchase	Service
270	Reo	1½-ton	1289	Feb. 1921	General cartage .....
271	Reo	1½-ton	1289	Feb. 1921	General cartage .....
272	Reo	1½-ton	1289	Feb. 1921	General cartage .....
273	Reo	1½-ton	1289	Feb. 1921	Pump and pipe line maintenance
274	Reo	1½-ton	1289	Feb. 1921	Power House operators .....
275	Oldsmobile	1-ton	1228	Jan. 1921	General cartage .....
276	Oldsmobile	1-ton	1228	Jan. 1921	General cartage .....
278	Packard	1½-ton	1641	April,1921	Express and freight .....
279	Ruggles	2-ton	1640	May, 1921	General cartage .....
280	Ruggles	2-ton	1640	May, 1921	General cartage .....
281	Ruggles	2-ton	1640	May, 1921	General cartage .....
282	Ruggles	2-ton	1640	May, 1921	General cartage .....

COPY

Miscellaneous

No.	Make	Capacity	Order No.	Date of Purchase	Service
237	Packard	5-Passenger	4484	Feb. 1919	Ambulance service .....
244	Reo	3/4-ton	4940	Dec. 1919	Hospital service .....
250	Reo	3/4-ton	5214	Dec. 1919	Fire truck .....
277	Packard	5-Passenger	1641	May, 1921	Ambulance service .....
3	Fordson Tractor				Railway Construction Dept. ....
4	Fordson Tractor				Railway Construction Dept. ....
5	Fordson Tractor				Railway Construction Dept. ....
6	Fordson Tractor				Railway Construction Dept. ....
	Holt	10-ton Caterpillar Tractor	134	March,1917	.....
	Holt	10-ton Caterpillar Tractor	134	March,1917	.....
236	Troy Trailer		4160	Dec. 1918	.....

* Figured from actual date of purchase whether or not the truck or car was delivered now to the Niagara work. A considerable number of these trucks were not so delivered. For instance six Packard Trucks, including all the Packard Dump Trucks, were used on the Ontario Power Company extension work before being assigned to the Queenston-Chippawa Power Development work.

General Service (continued)

	Time in Service* From		To	Remarks
...	Feb. 1921	-	March,1923	Still in service.
...	Feb. 1921	-	March,1923	Still in service.
...	Feb. 1921	-	March,1923	Still in service.
...	Feb. 1921	-	March,1923	Still in service.
...	Feb. 1921	-	March,1923	Still in service.
...	Jan. 1921	-	Nov. 1921	Salvage Department.
...	Jan. 1921	-	Dec. 1921	Salvage Department.
...	April,1921	-	March,1923	Still in service.
...	May, 1921	-	March,1923	Still in service.
...	May, 1921	-	Dec. 1921	Sold.
...	May, 1921	-	Dec. 1921	Sold.
...	May, 1921	-	Dec. 1921	Sold.

Automotive Equipment

COPY

	Time in Service* From		To	Remarks
...	Feb. 1919	-	March,1923	Still in service.
...	Dec. 1919	-	Dec. 1921	Salvage Department.
...	Dec. 1919	-	March,1923	Fire protection.
...	May, 1921	-	March,1923	Still in service.
...	May, 1918	-	June, 1922	Salvage Department.
...	May, 1918	-	June, 1922	Salvage Department.
...	May, 1918	-	June, 1922	Salvage Department.
...	May, 1918	-	June, 1922	Salvage Department.
.....				Salvage Department.
.....				Salvage Department.
..	Dec. 1918	-	March,1923	Still in service.

WALTER J. FRANCIS & COMPANY.

COPY FOR ENCLOSURE TO Mr. J. Allan Ross.

Passenger

No.	Make	Description	Order No.	Date of Purchase	Assigned to - 1921
107	McLaughlin	Roadster	3231	May, 1918	Master Mechanic
142	McLaughlin	Roadster	4851	July, 1919	Works Engineer
143	McLaughlin	Roadster	4851	July, 1919	Assistant Medical Officer
148	Overland	Roadster		1920	Resident Electrical Engineer
151	McLaughlin	Roadster	5155	Nov. 1919	Superintendent of Canal Division
152	McLaughlin	Roadster	5155	Nov. 1919	Plant Engineer
156	Chevrolet	Roadster	5363	Feb. 1920	Superintendent of Salvage
157	Chevrolet	Roadster	5363	Feb. 1920	Superintendent of Division 1
159	Chevrolet	Roadster	5363	Feb. 1920	Assistant Medical Officer
162	McLaughlin	Touring	187	May, 1920	Chief Medical Officer
163	McLaughlin	Touring	347	June, 1920	Visitors and General Service
166	Chevrolet	Roadster	348	July, 1920	Spare
167	McLaughlin	Roadster	347	June, 1920	Superintendent of Stores
168	McLaughlin	Roadster	347	June, 1920	Superintendent of Automotive Equipment
169	McLaughlin	Roadster	347	June, 1920	Superintendent of Railway Construction and Maintenance
170	McLaughlin	Roadster	347	June, 1920	Chief Hydraulic Engineer, and Spare
171	McLaughlin	Roadster	347	June, 1920	General Superintendent of Construction
172	Chevrolet	Roadster	348	July, 1920	Resident Engineer, Division 4
173	Chevrolet	Roadster	348	July, 1920	Resident Engineer, Division 1
174	Chevrolet	Roadster	348	Aug. 1920	Master Electrician
175	Chevrolet	Roadster	600	Aug. 1920	Superintendent of Sanitation
176	Chevrolet	Roadster	1130	Aug. 1920	Superintendent of Operation
177	Chevrolet	Roadster	1130	June, 1921	Assistant Hydraulic Engineer
178	Chevrolet	Roadster	1132	June, 1921	Chief Field Engineer
179	Chevrolet	Roadster	1132	June, 1921	General Line Foreman
	Excelsior Motor Cycle			May, 1918	Timekeeping Department

Note: The above list constitutes the maximum number of passenger cars in use at any time on the Queenston-Chippawa Power Development; twenty-three cars in continuous service, sixteen under the jurisdiction of Works Engineer, seven directly under the control of Toronto Office, and two spares.

Motor Cars

Where Used 1921	Assigned to - 1923	Where Used 1923
... Whole works	Resident Engineer, Division 2.	Canal
... Whole works	Assistant Field Engineer	Whole works
... Hospital	Superintendent Automotive Equipment	Whole works
... Power House	Sold	
... Canal	Sold	
... Whole works	Plant Engineer	Whole works
... Salvage Dept.	Superintendent of Operation	Power House
... Intake and River	Resident Electrical Engineer	Power House
... Hospital	Resident Engineer, Division 1.	Intake
... Hospital	Chief Medical Officer	Whole works
... Whole works	Visitors and General Service	Whole works
... Whole works	Assistant Hydraulic Engineer	Whole works
... Whole works	Being rebuilt	
... Whole works	Spare	
... Whole works	General Supt. of Canal Construction	Canal
... Whole works	Master Mechanic	Whole works
... Whole works	Being rebuilt	
... Power House	Being rebuilt	
... Canal	Supt. of Power House Construction	Power House
... Whole works	Master Electrician	Whole works
... Whole works	Being rebuilt	
... Power House	Chief Field Engineer	Whole works
... Whole works	Assistant Superintendent of Construction	Canal
... Whole works	First Aid Officer	Whole works
... Canal	Resident Engineer, Division 4.	Power House
...	Salvage Department	

Roadways.

The automobiles were used chiefly on the public highways in the vicinity and to some extent along the construction trails in the vicinity of the work.

Garage.

The headquarters of the fleet were on Stanley Street in the heart of the operating district. The cars were under the control of the superintendent of Divisions2 and 3, Mr. Fred W. Scriven, who directed the service through the garage superintendent. The garage costs were recorded by clerks in special charge of the work, who reported to the cost clerk, Mr. Arthur G. Bradley. At the headquarters supplies of gasoline and oil were kept and supplied for the cars under definite governing rules. Repairs to the cars were also done at the garage and a regular record thereof was duly kept.

WATER TRANSPORTATION.

General.

For the work on the Niagara River, the Intake, and the Welland River, launches and scows were used for transportation. The details of this transportation will be taken up in that part of Chapter H referring to the earth and rock excavation of the Intake and the Welland River.

Since the filling of the Canal in December of 1921, the launch "Malinche"

has been used for inspection in traversing the whole length of the Canal.

CONSTRUCTION RAILWAY.

General.

The construction railway system was the most important of the transportation elements. It comprised in all over seventy miles of standard gauge track and switches and was operated by electric locomotives as well as by steam power, the former being capable of a speed of 15 miles per hour with a loaded dirt train of eight cars. The eight pages now following, being pages H-47 to H-54 hereof, show the complete system, the first six pages being plans, and the last two profiles. In addition to transporting about sixteen million cubic yards of earth and rock excavation, all the raw materials for concrete work and all the major items for the construction plant, as well as for the permanent work, passed over the system.

The traffic on the main line tracks was very heavy, the maximum density of traffic obtaining in the vicinity of the disposal "Y" just prior to the opening of the Lundys Lane disposal area. At that time the interlock tower at the "Y" reported as many as one thousand train movements in twenty-four hours, being an average of one train every ninety seconds. Later, the movements frequently exceeded five hundred per day. As an example, the train sheet for February 24th-25th, 1921, typical of the train work of the period shows the following movements:

HYDRO-ELECTRIC INQUIRY COMMISSION

W. D. GREGORY–CHAIRMAN

QUEENSTON-CHIPPAWA POWER DEVELOPMENT

CONSTRUCTION RAILWAYS

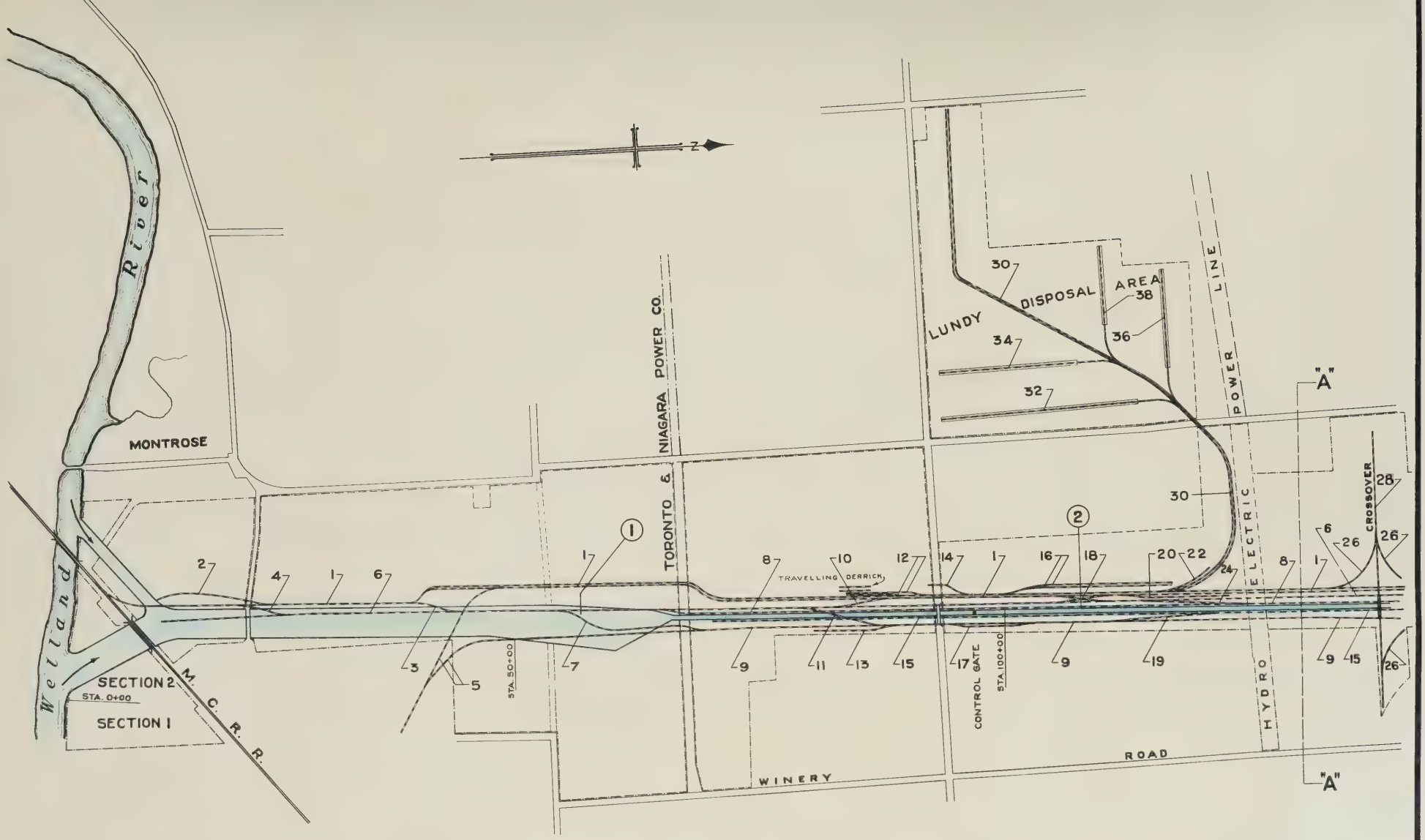
KEY PLAN FOR 5 SHEETS FOLLOWING

Toronto, Nov. 3rd, 1922 Made by [illegible] Checked by [illegible]

WALTER J. FRANCIS, C.E.,

CONSULTING ENGINEER

(H-47)



NOTE:- CONSTRUCTION TRACKS REFERRED TO IN TEXT INDICATED THUS:- 3

ELECTRICALLY OPERATED CONSTRUCTION TRACKS SHOWN THUS:-

OTHER RAILWAYS SHOWN THUS:-

MILES FROM JUNCTION OF CANAL & WELLAND RIVER SHOWN THUS:- (1)

CONSTRUCTION TRESTLES SHOWN THUS:-

1000 500 0 1000 2000

Scale of Feet

HYDRO-ELECTRIC INQUIRY COMMISSION

WALTER J. FRANCIS C.E., CONSULTING ENGINEER

TORONTO, AUG 5TH, 1922

SHEET 1

(H-48)


G. T. R. (WABASH)
LUNDYS LANE
HYDRO ELECTRIC POWER LINE
CROSSOVER
ROAD
"A"
"B"
STA. 150+00
STA. 200+00
STA. 110+00
TO POWER HOUSE
MORRISON ST. DIVERSION
SECTION 2
STA. 235+00
SECTION 3
STREET
ROAD
VICTORIA
NORTH CITY LIMIT
PORTAGE
STANLEY STREET
WINERY
NOTE:- CONSTRUCTION TRACKS REFERRED TO IN TEXT INDICATED THUS:-
ELECTRICALLY OPERATED CONSTRUCTION TRACKS SHOWN THUS:-
OTHER RAILWAYS SHOWN THUS:-
MILES FROM JUNCTION OF CANAL & WELLAND RIVER SHOWN THUS:-
500 0 1000 2000
Scale of Feet
HYDRO-ELECTRIC INQUIRY COMMISSION
WALTER J. FRANCIS, C.E., CONSULTING ENGINEER
TORONTO, AUG. 5TH, 1922
SHEET 2


NOTE:- CONSTRUCTION TRACKS REFERED TO IN TEXT INDICATED THUS:- 74
ELECTRICALLY OPERATED CONSTRUCTION TRACKS SHOWN THUS:-
OTHER RAILWAYS SHOWN THUS:-
MILES FROM JUNCTION OF CANAL & WELLAND RIVER SHOWN THUS:- (7)
"D"
"D"
TO MAIN DISPOSAL AREA
"B"
(WABASH)
G. T. R.
STREET
WHIRLPOOL YARDS
STANLEY ST. DIVERSION
(6)
R.
WHIRLPOOL DISPOSAL AREA
(5)
TO MONTROSE
CEMETERY DISPOSAL AREA
STA. 300+00
STANLEY
N. ST. C. & T. R. Co.
M. C. G. T. R.
AVENUE
VICTORIA
CITY OF NIAGARA FALLS
"B"
"C"
(7)
DISPOSAL
STA. 380+00
TO POWER HOUSE
WHIRLPOOL
INTERNATIONAL RAILWAY COMPANY
Niagara River
"C"
1000 500 0 1000 2000
Scale of Feet
HYDRO-ELECTRIC INQUIRY COMMISSION
WALTER J. FRANCIS, C.E., CONSULTING ENGINEER
TORONTO, AUG. 5TH, 1922
SHEET 3
(H-50)

NOTE:- CONSTRUCTION TRACKS REFERRED TO IN TEXT INDICATED THUS:- 47

ELECTRICALLY OPERATED CONSTRUCTION TRACKS SHOWN THUS:- ——————

STEAM " " " " " ——+——+——

OTHER RAILWAYS SHOWN THUS:— ——————

MILES FROM JUNCTION OF CANAL & WELLAND RIVER SHOWN THUS:- (8)

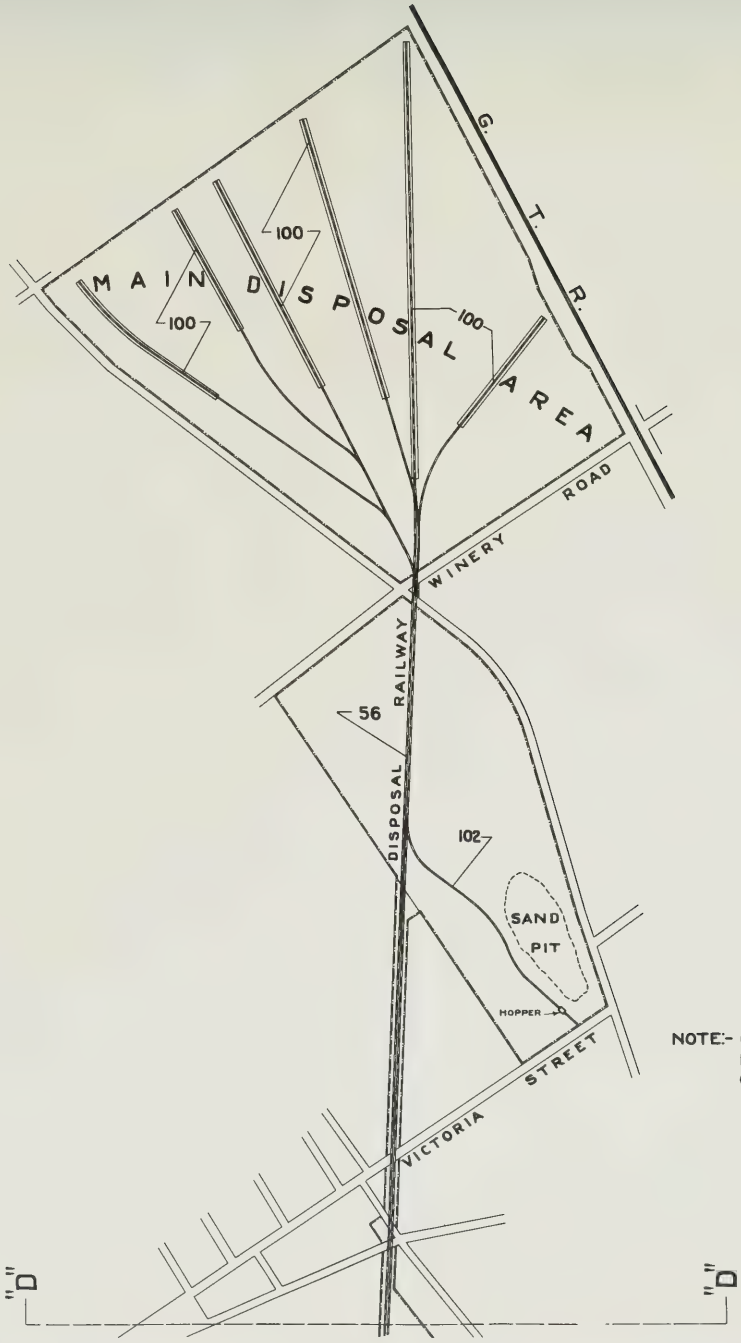
HYDRO-ELECTRIC INQUIRY COMMISSION

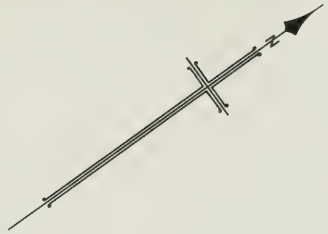
WALTER J. FRANCIS, C.E., CONSULTING ENGINEER

TORONTO, AUG. 5TH, 1922

SHEET 4

(H-51)





NOTE:- CONSTRUCTION TRACKS REFERRED TO IN TEXT INDICATED THUS:- 100

ELECTRICALLY OPERATED CONSTRUCTION TRACKS SHOWN THUS:-

OTHER RAILWAYS SHOWN THUS:-

CONSTRUCTION TRESTLES SHOWN THUS:-

1000 500 0 1000 2000

Scale of Feet

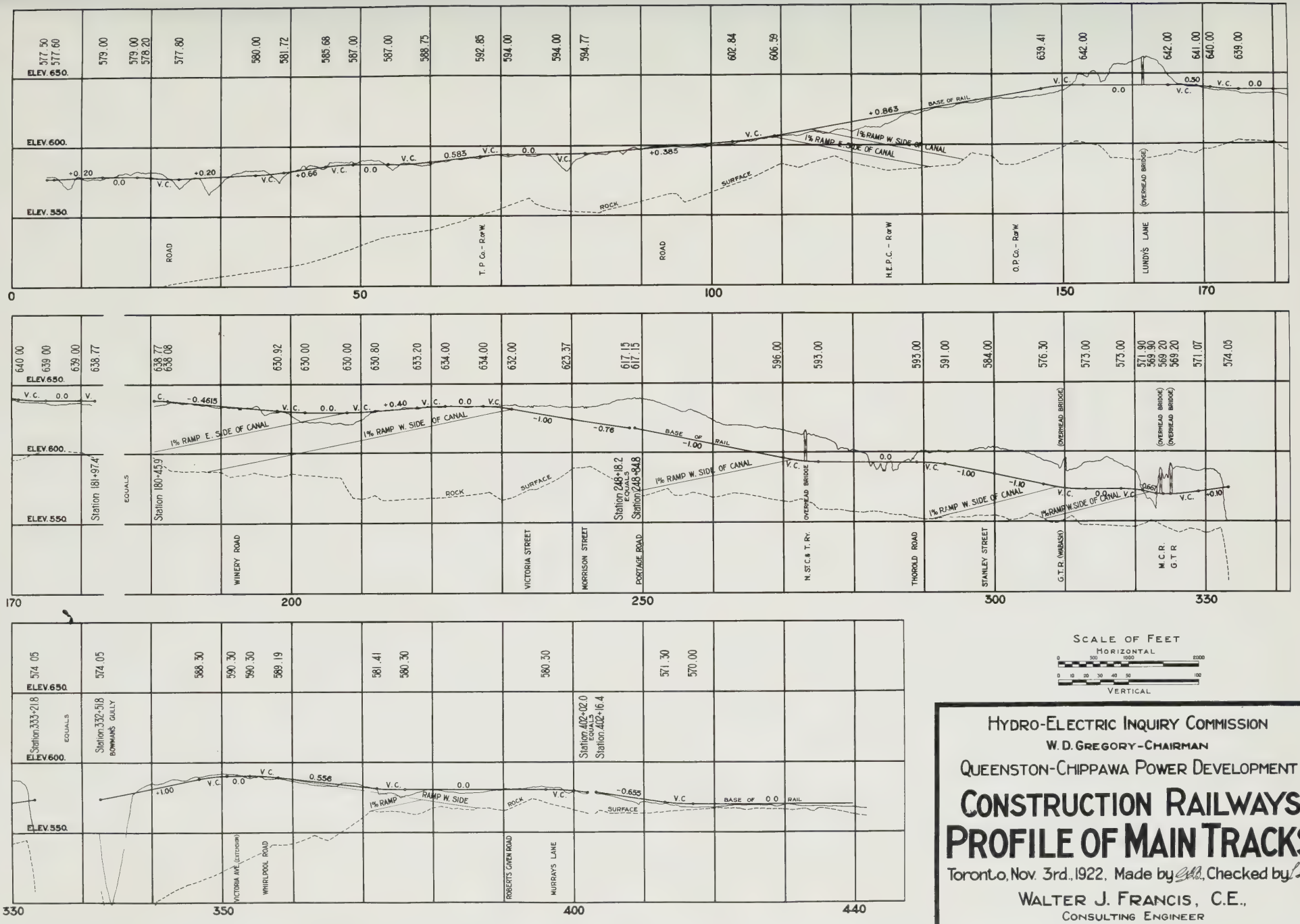
HYDRO-ELECTRIC INQUIRY COMMISSION

WALTER J. FRANCIS, C.E., CONSULTING ENGINEER

TORONTO, AUG. 5TH., 1922

SHEET 5

(H-52.)



SCALE OF FEET

HORIZONTAL

VERTICAL

HYDRO-ELECTRIC INQUIRY COMMISSION

W. D. GREGORY - CHAIRMAN

QUEENSTON-CHIPPAWA POWER DEVELOPMENT

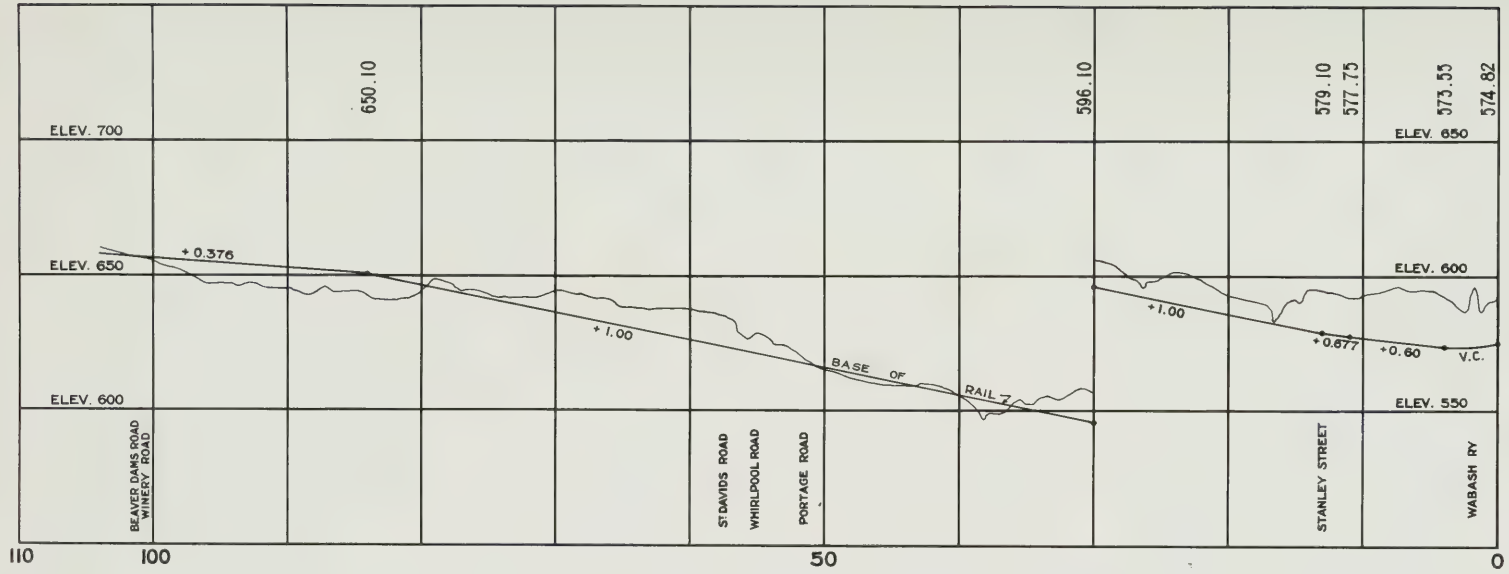
CONSTRUCTION RAILWAYS
PROFILE OF MAIN TRACKS

Toronto, Nov. 3rd., 1922. Made by [illegible], Checked by [illegible]

WALTER J. FRANCIS, C.E.,

CONSULTING ENGINEER

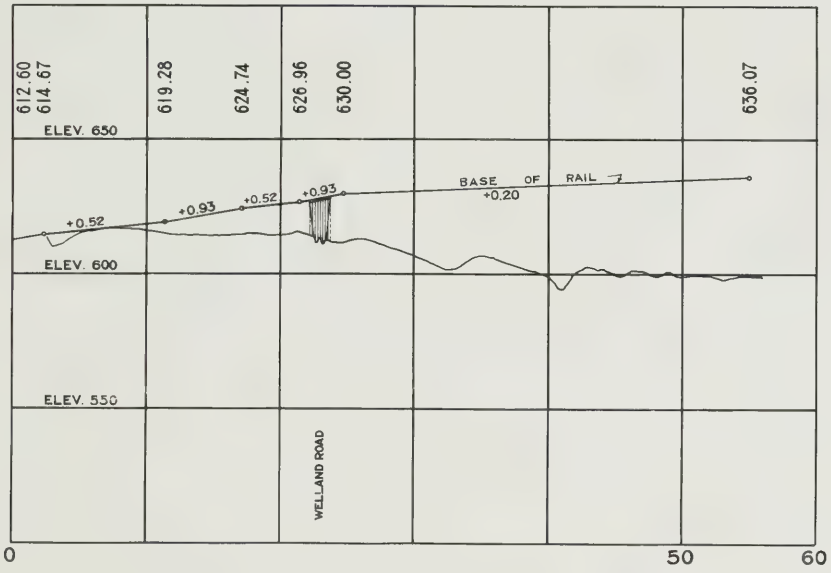
(H-33)



TRACK TO MAIN DISPOSAL AREA

SOUTH LEG OF WYE

NORTH LEG OF WYE



TRACK TO LUNDY DISPOSAL AREA

SCALE OF FEET

HORIZONTAL

0 500 1000 2000

0 10 20 30 40 50 100

VERTICAL

HYDRO-ELECTRIC INQUIRY COMMISSION

W. D. GREGORY-CHAIRMAN

QUEENSTON-CHIPPAWA POWER DEVELOPMENT

CONSTRUCTION RAILWAYS PROFILE OF TRACKS TO THE MAIN AND THE LUNDY DISPOSAL AREAS

Toronto. Nov. 3rd., 1922. Made by [illegible] Checked by [illegible]

WALTER J. FRANCIS, C.E.,

CONSULTING ENGINEER

(H-54)

Rock and Dirt Trains	236	movements
Material Trains	76	movements
Work Trains and Switchers	66	movements
Speeders	30	movements
Total for the day	408	movements

Historical Notes.

The survey for the construction railway commenced on November 22nd, 1916. The work on the railway construction was first confined to that portion of the system lying to the north of the Grand Trunk Railway, the crossing of which the Hydro-Electric Power Commission experienced difficulty in obtaining. The first work train service was instituted on May 17th, 1917, while the construction of the railway yards began on June 1st, 1917. The railway was in constant use throughout the construction period, and the dismantling of parts of it began immediately after the water was turned into the Canal in December, 1921. The dismantling has proceeded until only a comparatively small portion of the construction tracks now remain.

Permanent Tracks.

The portion of the construction railway system lying between the Michigan Central Railroad yards at Queenston and the Power House will be left for the permanent service of the Power House. It will also serve its purpose in connection with the completion of the construction of the Power House.

Switching.

The operation at the most congested part of the system was controlled by interlocking switches with standard signal towers and apparatus. The photograph on page H-57 illustrates the control apparatus and shows also a diagram of the interlocking system.

Alignment and Gradients.

The alignment and gradients used throughout the system conform to standard railway practice as far as it could be adopted. The sharpest curves on the principal parts of the system have a radius of 865 feet, while none of the grades exceed 1 per cent. For main line construction, 85 pound rail is used.

The six photographs included as pages H-58 to H-60 hereof show typical construction of the system.

The Lay-out of the System.

The general map included herewith as page H-47 shows the plan of the district, and is intended for use as a key map to the five sheets which follow it, being pages H-48 to H-52 inclusive, and which show the detail lay-out of the system.

The profile of the main tracks is shown on page H-53 hereof, and all the bridges are indicated thereon. The succeeding page, being H-54 hereof, shows the profile of the tracks leading to the main disposal area and to the Landys Lane disposal area.

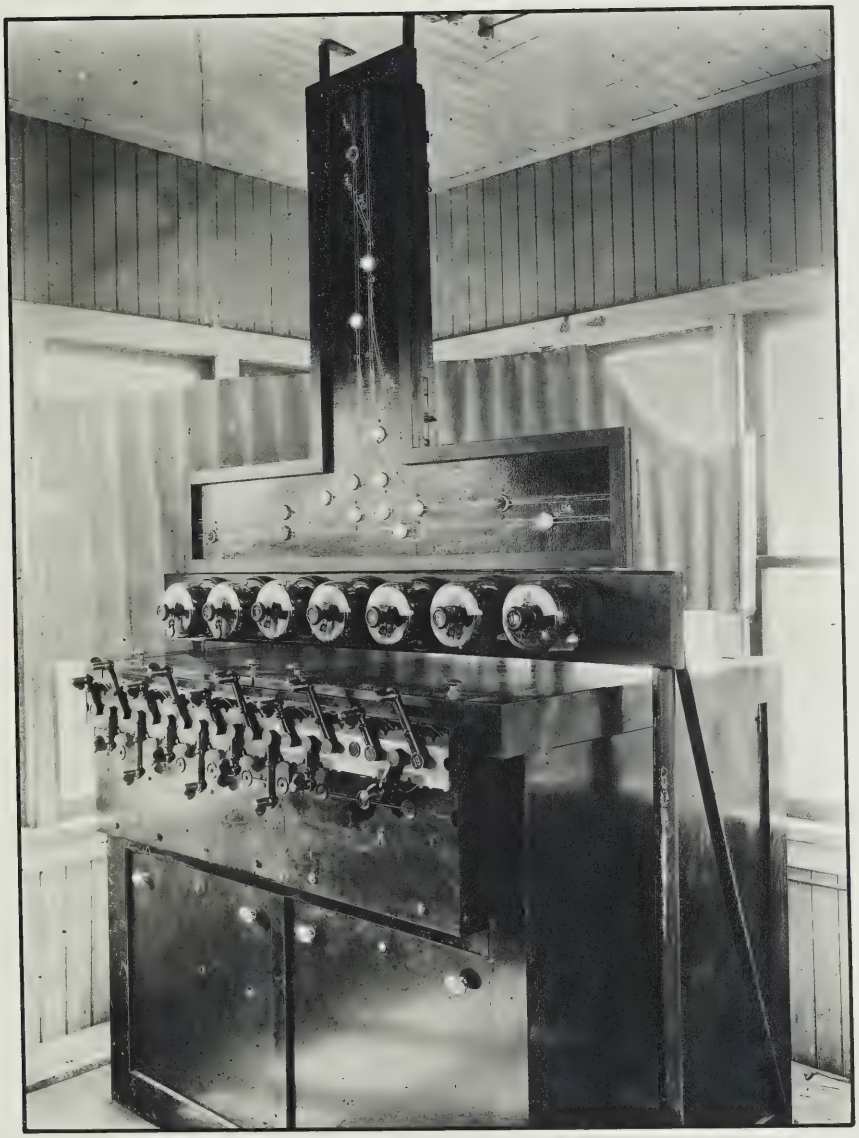
To face page H-57

No. H-24

Photograph showing

Interlocking Machine and Chart.

Taken August 4th, 1920.



To face page H-58

No. H-25

Photograph showing

Construction Railway.

looking south from Lundys Lane Crossing.

Taken December 2nd, 1920.

No. H-26

Photograph showing

Construction Railway: Loading Track Supported on Piles.

looking south from Station 72.

Taken May 3rd, 1921.


RIO CANAL 76+ (Sec 2)


967 - Tracking Track supported on Piles, S. From Sta. 72.+ May 31

To face page E-69

No. E-27

Photograph showing

Power House-Queenston Railway Subgrade,

looking north from Station 18.

Taken September 5th, 1919.

COPY

No. E-28

Photograph showing

Power House-Queenston Railway: Preparation of Subgrade,

looking south

Taken August 9th, 1919.


210-RAILWAYS-210

To face page H-60

No. H-29

Photograph showing

Construction Railway,

looking north from Lundys Lane Detour, West Side.

Taken October 3rd, 1919.

No. H-30

Photograph showing

Power House-Queenston Railway,

looking south from Station 13.

Taken November 7th, 1919.

The following table is a summary of the lengths of the principal tracks of the system.

Queenston-Chippawa Power Development
Construction Railway System
Summary of Length of Tracks

Classification	Total Lineal Feet
Main Tracks	83,900
Disposal Tracks:	
Lundys Lane	20,550
Cemetery	2,800
Principal Area	38,800
Whirlpool	2,500
Murray's Lane	1,300
Queenston	-
Loading Tracks - West Side	36,400
Loading Tracks - East Side	11,200
Ramp Tracks - West Side	13,300
Ramp Tracks - East Side	3,700
Rip-rap Tracks - West Side	26,600
Rip-rap Tracks - East Side	33,600
Connection with Niagara, St. Catharines and Toronto Railway	400
Yard Tracks - Whirlpool	16,100
Yard Tracks - G.T.R. Transfer	7,700
Yard Tracks - Forebay	8,650
Power House - Queenston Railway	22,750
Miscellaneous Tracks	42,750
	373,000 lineal feet

The detail of the various tracks is given in the following table:

Construction Line

Classification	Reference Number on Plan	Lineal Feet Single Track	Lineal Feet Double Track	Total Lineal Feet	
Main Tracks					
M.C.R.R. connection at Montrose to Sta. 42	1	3,600		3,600	
Sta. 42 to Sta. 443+50	1		40,150	80,300	83,900
Disposal Tracks					
Lundys Lane:					
Main Tracks, Sta.115 to end	30		6,900	13,800	
Spur Tracks	32	2,400		2,400	
Spur Tracks	34	1,800		1,800	
Spur Tracks	36	1,200		1,200	
Spur Tracks	36	1,350		1,350	20,550
Cemetery:					
Main Spur, Sta.251 to end	29	2,000		2,000	
Spur	31	800		800	2,800
Principal Area, Westerly from Sta. 315:					
"Y" Tracks	54		2,000	4,000	
"Y" Tracks to centre line of Beaver Dams Road ...	56		8,900	17,800	
Spur Tracks (six)	100	17,000		17,000	38,800
Whirlpool:					
Sta. 335	37	2,500		2,500	2,500
Sta. 372 (East Side)	41	1,300		1,300	1,300
Loading Tracks (West Side)					
Sta. 64 to Sta. 322	8	25,800		25,800	
Sta.354 to Sta. 480	90	10,600		10,600	36,400
Carried forward					186,250

Construction Line (continued)

Classification	Reference Number on Plan	Lineal Feet Single Track	Lineal Feet Double Track	Total Lineal Feet	
Brought forward					186,250
Loading and Construction Track (East Side)					
Sta.70 to Sta.182	15	11,200		11,200	11,200
Ramp Tracks (West Side)					
Sta.114 to Sta.125	24	1,100		1,100	
Sta.195 to Sta.231	46	3,600		3,600	
Sta.250 to Sta.271	48	2,100		2,100	
Sta.290 to Sta.309	50	1,900		1,900	
Sta.311 to Sta.322	52	1,100		1,100	
Sta.360 to Sta.387	53	2,700		2,700	
Sta.367 to Sta.375	92	800		800	13,300
Ramp Tracks (East Side)					
Sta.110 to Sta.122	19	1,200		1,200	
Sta.182 to Sta.207	21	2,500		2,500	3,700
Top of Bank, Rip-rap Tracks (West Side)					
Sta.14 to Sta.243	6	22,900		22,900	
Sta.328 to Sta.365	80	3,700		3,700	26,600
Top of Bank, Rip-rap Tracks (East Side)					
Sta.46 to Sta.295	9	24,900		24,900	
Sta.311 to Sta.322	35	1,100		1,100	
Sta.324 to Sta.400	39	7,600		7,600	33,600
Connection with N.St.C. & T.R. (East Side)					
Sta.272	33	400		400	400
Whirlpool Yards					
Spur off N.C.R.R.	74	2,000		2,000	
Spur off Disposal Track	58	2,500		2,500	
Tracks through Building No.57	60	3,000		3,000	
North of Building No. 120	72	1,700		1,700	
Carried forward				9,200	275,050

Construction Line (continued)

Classification	Reference Number on Plan	Lineal Feet Single Track	Lineal Feet Double Track	Total Lineal Feet	
Brought forward				9,200	275,050
Whirlpool Yards (continued)					
Through Machine Shop, Main Track	70	1,350		1,350	
Through Machine Shop, Other Tracks	66	1,200		1,200	
Around West Side Machine Shop ..	68	2,100		2,100	
Around East Side Machine Shop ..	64	1,650		1,650	
West of above	62	600		600	16,100
G.T.R. Transfer and Yard					
Transfer Track	78	3,400		3,400	
Off Transfer Track to Cement Shed	84	1,800		1,800	
Tracks North of Transfer Track .	86	2,500		2,500	7,700
Forebay Yards					
All Tracks	47	8,650		8,650	8,650
Power House, -Queenston Railway					
Main Line (Single Track)	51	14,250		14,250	
Branch, Low Level, East of Power House	49	3,350		3,350	
Sorting Yard	55	5,150		5,150	22,750
Miscellaneous Tracks					
Sta. 20, Track to Coal Dock, West Side	2	1,200		1,200	
Sta. 25, Crossover	4	800		800	
Sta. 42, Crossover	3	600		600	
Sta. 44, Crossover, Canal and Switchback	5	2,700		2,700	
Sta. 60, Crossover Canal	7	1,600		1,600	
Sta. 85, Crossover Canal	11	800		800	
Sta. 85, Crossover	10	800		800	
Sta. 85, Spur	13	900		900	
Sta. 85, Tracks to Coal Trestle.	12	1,400		1,400	
Sta. 95, Track to Transformer Station	14	400		400	
Sta. 95, Passing Track, East Side	17	900		900	
Carried forward				12,100	330,250

Construction Line (continued)

Classification	Reference Number on Plan	Lineal Feet Single Track	Lineal Feet Double Track	Total Lineal Feet	
Brought forward				12,100	330,250
Miscellaneous Tracks (continued)					
Sta. 99, Storage Tracks, West Side	16	3,200		3,200	
Sta. 107, Double Crossover ...	18	1,000		1,000	
Sta. 112, Storage Track, West Side	20	1,150		1,150	
Sta. 115, Salting and Oiling Track	22	800		800	
Sta. 138, Crossover Canal	28	2,800		2,800	
Sta. 138, Three Wye Tracks ...	26	2,500		2,500	
Sta. 150, Sand and Stone Storage West Side	43	2,500		2,500	
Sta. 160, Passing Track, East Side	23	700		700	
Sta. 170, Passing Track, East Side	25	1,000		1,000	
Sta. 190, Crossover, West Side.	42	700		700	
Sta. 210, Crossover, West Side	44	1,000		1,000	
Sta. 211 to 262, Passing Track East Side	27	5,100		5,100	
Sta. 341, Spur, West Side	76	500		500	
Sta. 350, To Concrete Mixing Plant, West Side	82	1,000		1,000	
Sta. 390, Spur, West Side	96	1,600		1,600	
Sta. 400, Crossover, West Side	98	500		500	
Sta. 420, Rip-rap, West Side .	43	1,300		1,300	
Sta. 430, Crossover, West Side	45	1,300		1,300	
To Sand Pit, off North Bound Track to Principal Disposal Area	102	2,000		2,000	42,750
Total Lineal Feet ...					373,000

Main Line Tracks.

The main line tracks consist of a double track, standard gauge, electrically operated line, marked 1 on the plans, constructed along the westerly bank of the Canal from a point near the Welland River northerly to the Forebay. These tracks were used for general construction service, for the handling of work trains, and for the distribution of material and so forth. To facilitate operation, cross-over tracks were laid at convenient points connecting the northbound and southbound tracks.

Power House - Queenston Railway.

The part of the system known as the Power House - Queenston Railway, at the general level of the operating floor of the Power House, is a single track, standard gauge, steam operated line, denoted by the figure 51 on the plans. It commences at the Power House, skirting the edge of the Niagara River to Queenston and continues westerly to a junction with the Michigan Central Railroad, Niagara Branch, to the south of the Village of Queenston. This part of the system is indirectly connected with that of the upper elevation of the works. At a point about 2,000 feet northerly from the Power House, a spur was constructed southerly, past the face of this structure with a tail track and switch returning to the southerly face of the building. Spoil from the Power House excavation was carried over this track to a disposal area at Queenston, structural steel and other material with the exception of concrete, for use in the construction of the building, and later the permanent equipment of the plant was brought to the

site over this track.

The track will be retained as a permanent connection with the Michigan Central Railroad for the Power House service.

The tail track now enters the southerly end of the Power House, through a temporary doorway, the sill of which is at Elevation 284, being the floor elevation at the base of the service units. It is the intention when the Power House will have been completed, to form a doorway at the northerly end of the Power House with the sill at Elevation 297.25 on the main operating floor, and to use this entrance for the railway siding in order to obviate the possibility of difficulty with the lower entrance in the event of a rise in the tail water as a result of an ice jam.

At a point about 700 feet northerly from the boat wharf of the Canada Steamship Lines at Queenston, the International Railway Company forms a junction with the Power House - Queenston Railway, and an agreement covers their use of this track for access to the wharf. This arrangement is in lieu of a part of the original line now abandoned, the right-of-way forming a part of the Queenston disposal area previously mentioned.

Transfer Connections with Other Railways.

As previously noted, the Power House - Queenston branch has a transfer with the Michigan Central Railroad near Queenston. There are four other transfer connections with other railways as follows: to the Michigan Central Railroad near Montrose by a single track on the double track construction railway already referred to, approximately 3,300 feet long; to the Niagara branch of the

Michigan Central Railroad at the Whirlpool yards there is also a connection indicated by the numeral 74 on the plans; to the Grand Trunk Railway at Station 360 on the canal chainage a connection is made with a track from the main line construction track denoted by the number 78 on the plans; with the Niagara, St. Catharines and Toronto Railway by a connection at Station 272 from the rip-rap track at the east bank of the Canal denoted by the numeral 33.

Tracks to Disposal Areas.

A double track, electrically operated line, denoted by the numeral 30 on the plans, branches from the main construction tracks at Station 115 and continues in a westerly direction to and through the Lundys Lane disposal area about one and one-third miles. Four tracks were carried over this area on temporary unloading trestles from which the spoil was distributed. Trolley wires were supported on temporary standards of frame construction shifted when necessary.

A spur about one-half mile in length, denoted by the numeral 29, extending easterly, branches from the track at the top of the east bank of the Canal at Station 251 for the cemetery disposal area. Off this spur there is a branch, denoted by the numeral 31, 800 feet in length.

Access to the main disposal area, situated about one and three-quarter miles north-westerly from Station 315, is obtained over an electrically operated double track, denoted by the numeral 51, branching from the main tracks through the north and south tracks on a "Y" at Stations 322 and 310 respectively, and terminating in six spur tracks, denoted by the numeral 100, carried over the

area on temporary unloading trestles. The trolley wires were supported as in the case of the Lundys Lane disposal area previously referred to.

The single track line, denoted by the numeral 37, was constructed to encircle an area lying south-easterly from the canal site at Station 330 known as the Whirlpool disposal area or Bowman's Gully.

A single track spur denoted by the numeral 41, 1,300 feet in length, was constructed in a south-easterly direction for the disposal of spoil in the Murray's Lane disposal area.

Track to Sand Pit.

From the west bound track serving the main disposal area about one and one-half miles from its junction with the main construction track, a spur track, denoted by the numeral 13½, extends in an easterly direction about 2,000 feet to a sand pit and hopper situated in Lot 25, County of Stamford.

Ramp and Loading Tracks.

For handling the rock excavation from the shovel dippers, a loading track denoted by the numeral 8, was constructed at the westerly edge of the Canal along the 10-foot berm of the natural rock surface. This line was electrically operated and began at Station 70 of the canal chainage near the northerly end of the earth section continuing to Station 322 near the southerly end of the Whirlpool section, beginning again at Station 354 at the northerly end of the section and continuing to the forebay. At convenient points ramp tracks

constructed on one per cent. maximum grade were built to connect the loading track with the double track main line above. The ramp tracks were located having in mind the conformation of the natural rock surface giving the least possible length of ramp with a one per cent. grade. The rock spoil was loaded directly into the cars of the dirt trains standing on the loading track. The dirt trains were moved car by car to suit the convenience of the shovels, and when fully loaded were hauled up the ramps to the double track main line and thence to the disposal area.

Beginning at Station 70, near the northerly end of the earth section, a track denoted by the numeral 15 was located on the 10-foot berm of the easterly side of the Canal and continued northerly about two miles, thence up a one per cent. ramp to a junction at Station 207 with the general service track at the top of the bank.

At Station 122 a ramp 1,200 feet in length also provided access to this track from the general service track. This track was used to a great extent during the concrete construction work of the canal floor and lining.

Rip-rap and Loading Tracks.

Extending along the top of the bank and both sides of the Canal, tracks were built primarily for loading purposes, and were also used for unloading spoil from the rock section to be used as rip-rap. It was found necessary generally to follow up the shovels closely with the rip-rap deposit. As a convenience, these tracks were popularly known as the "rip-rap tracks". The rip-rap tracks on the westerly bank are shown on the plan by the numerals

6 and 80, while those on the easterly bank are numbered 9, 35 and 39.

Yard Tracks.

The Whirlpool yards were the principal yards used during construction. They were located on the westerly side of the Canal opposite Station 325 in part of Lots 42 to 57, County of Stamford, and lying between the main track leading to the main disposal area and the tracks of the Michigan Central Railroad. There were entrances to the yard from the disposal area tracks and from the Michigan Central Railroad tracks. In the Whirlpool yards were located the locomotive sheds, car repair shop, machine shop, main storehouse, miscellaneous storehouses and other buildings. The tracks serving the several facilities are indicated on the plan by the following numbers: 58, 60, 62, 64, 66, 68, 70, 72 and 74, track 58 being the entrance to the yard from the disposal area tracks, and track 74 entering the yard from the Michigan Central Railroad.

From the track indicated by the numeral 78, being the connection with the Grand Trunk Railway at Station 356 in the district of the Whirlpool yards, there are tracks, denoted by the numeral 84, serving two large cement storage sheds. An additional track, denoted by the numeral 86, branching from the south-bound main construction track at Station 360, parallel to and about 200 feet northerly from the transfer track, serves three cement storage sheds.

The Forebay yards are located immediately to the north of the Forebay and form the northerly terminus of the double track main system. In these

yards are located the primary and secondary crushers, the stone screen and bins, the sand storage and mixing plant conveyors, a cement shed, a storage building and a machine shop. There were also large areas reserved for the storage of one-inch and two-inch crushed stone. The tracks serving the various facilities are indicated on the plan by the reference numeral 47.

A sorting yard was established at the junction of the Power House-Queenston Railway with the Michigan Central Railroad, Niagara branch, and storage houses were built for materials to be used in the construction of the Power House. A travelling derrick was also erected at this point for unloading and transferring the heavy machinery for the Power House. The several tracks serving the storehouses and the derrick are indicated on the plan by the reference number 55.

Canal Crossings.

Branching in a south-easterly direction from the north-bound main construction track at Station 49, a track denoted by the numeral 5 was constructed, crossing over the canal site at an angle of 62 degrees and extending a distance of 2,500 feet. From this track a switch connected with the track emerging into the rip-rap track along the easterly bank of the Canal. Two other crossings were made, one at Station 60 and the other at Station 85, connecting the rip-rap tracks on the east and west banks of the Canal. All three crossings were subsequently removed to permit of the operation of the suction dredge. In lieu of these three crossings a more permanent crossover was constructed at Station 138, shown on the plan by the reference

number 28. This was a right angle crossing carried over the Canal on a steel plate girder span and connecting with the northbound main construction track by "Y's", denoted by the numeral 36, to the north and to the south. At the east side of the Canal a "Y" to the north connected with the rip-rap track at the top of the bank.

At Station 398 the track shown on the plan by the reference number 39 was carried over the Canal to form a junction with the track denoted by the numeral 90 on the westerly side of the Canal.

Miscellaneous Tracks.

In addition to the foregoing tracks there were many sidings and cross-over tracks built for specific purposes, reference to which will be found in the table giving the length of track in the system.

Equipment.

The equipment of the railway system consisted generally speaking of twenty-four electric locomotives, twenty-two steam locomotives, three hundred and nineteen dump cars, and about fifty other cars together with cranes and other miscellaneous rolling stock. The fourteen photographs shown on pages H-74 to H-80 show clearly the type of equipment used. Equipment was purchased as the needs of the work asserted themselves, the first important order being placed on March 28th, 1917.

To face page H-74

No. H-31

Photograph showing

Typical 40-ton Steam Locomotive.

Taken November 7th, 1919.

No. H-32

Photograph showing

Typical Saddle Tank Locomotive.

Taken October 6th, 1920.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To face page H-75

No. H-33

Photograph showing

Typical Electric Locomotive.

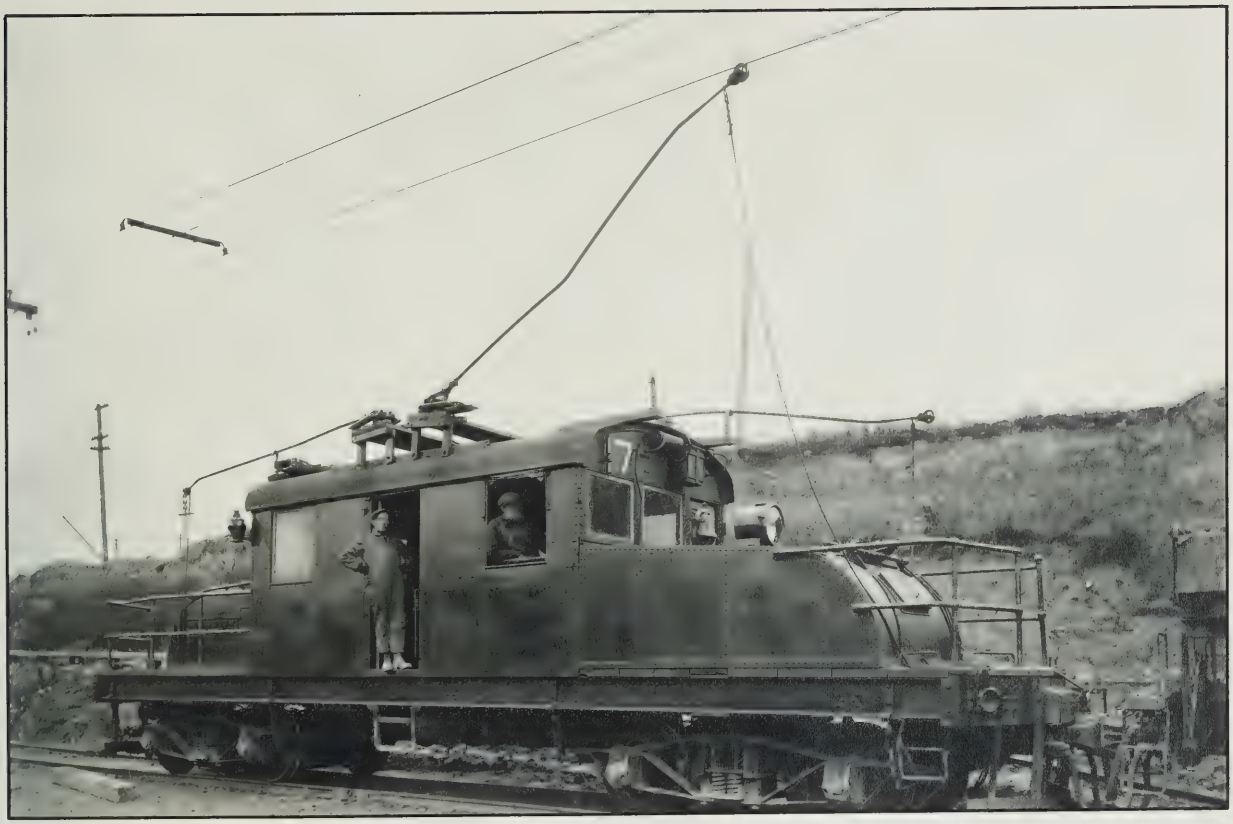
Taken November 6th, 1919.

No. H-34

Photograph showing

Typical Electric Locomotive.

Taken November 7th, 1919.




E21
POWER COMMISSION

To face page H-76

No. H-35

Photograph showing

Typical Electric Locomotive.

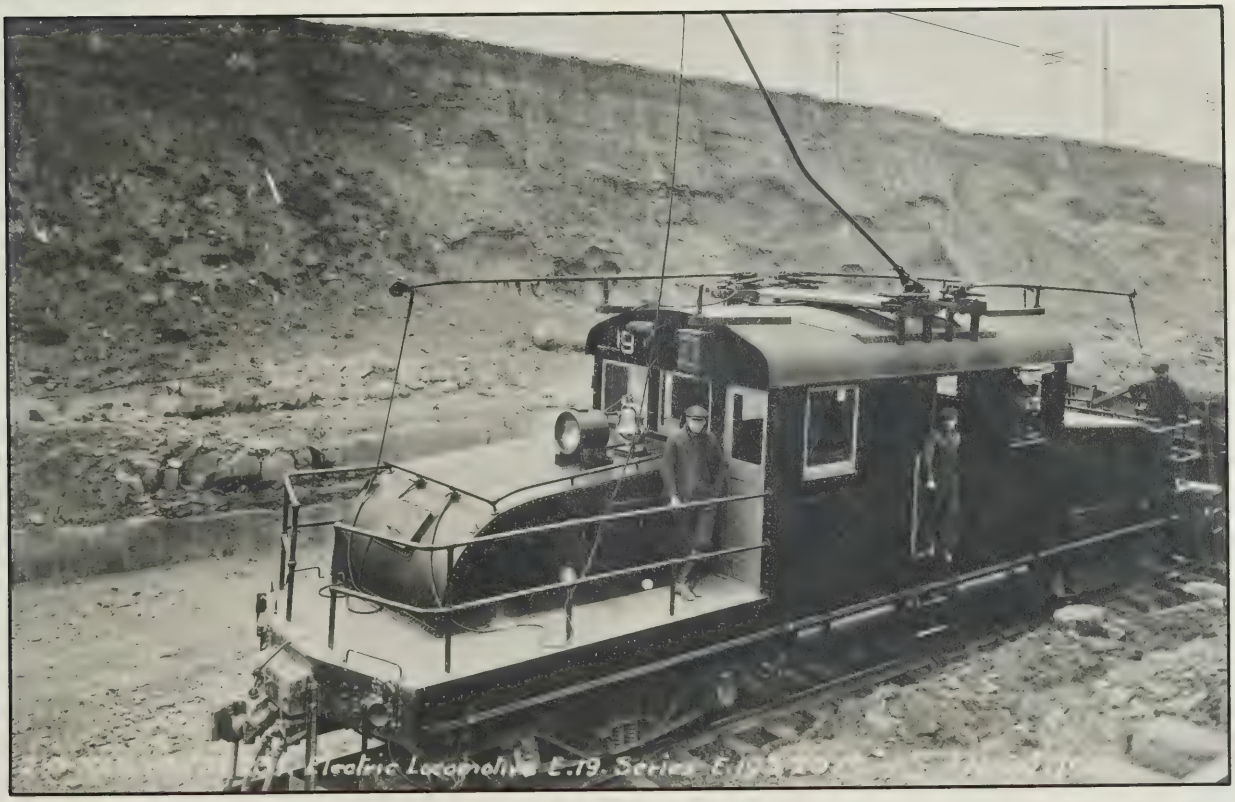
Taken June 3rd, 1919.

No. H-36

Photograph showing

Typical Electric Locomotive.

Taken November 7th, 1919.



Electric Locomotive E.19. Series

To face page H-77

No. H-37

Photograph showing

Under Side of Typical Standard Steel 20-yard Dump Car.

Taken March 7th, 1919.

No. H-38

Photograph showing

Standard Steel 20-yard Dump Car.

Taken November 6th, 1922.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To face page H-78

No. H-39

Photograph showing

Dirt Train Loaded with Earth.

Taken February 6th, 1919.

COPY

No. H-40

Photograph showing

Dirt Train Being Loaded by Shovel No. 1.

Taken August 7th, 1918.


HYDRO ELECTRIC POWER COMMISSION

WALTER J. FRANCIS & COMPANY.

COPY FOR ENCLOSURE TO Mr. J. Allan Ross.

To face page H-79

No. H-41

Photograph showing

75-ton Locomotive Crane.

Taken November 7th, 1919.

COPY

No. H-42

Photograph showing

20-ton Locomotive Crane.

Taken November 8th, 1919.


INDUSTRIAL

, To face page H-80

No. H-43

Photograph showing

Snowplough.

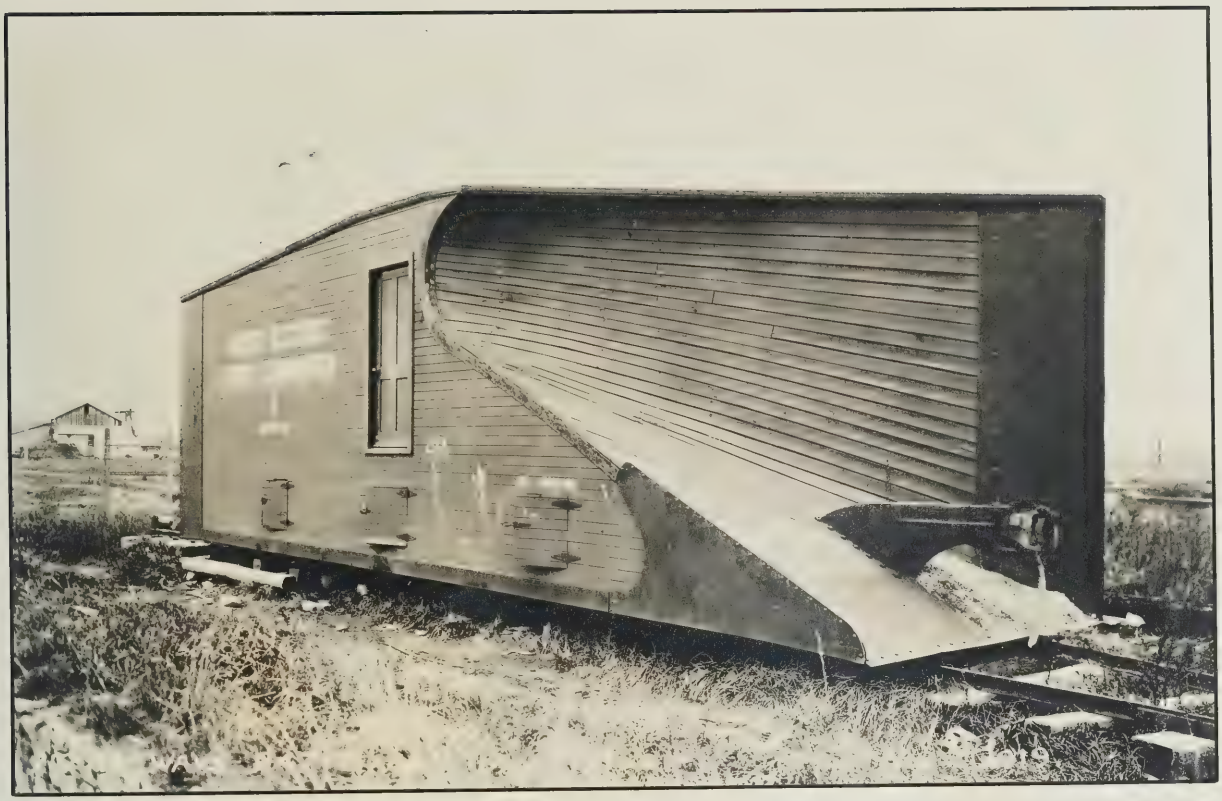
Taken November 7th, 1919.

No. H-44

Photograph showing

Motor-driven Concrete Car.

Taken May 6th, 1921.



In addition to the rolling stock there were one coal dock, one coal trestle, one locomotive shed, one car repair shop and miscellaneous storage sheds.

The following is a list of the principal items of railway equipment:

Number	Description
24	Electric Locomotives
22	Steam Locomotives
319	Dump Cars
26	Flat Cars
16	Box Cars
4	Gondola Cars
3	Passenger Coaches
3	Trolley Cars
14	Push Cars
4	Hand Cars
11	Gasoline Speeders
1	Concrete Mixer
1	Snowplough
1	Wrecking Crane
7	Railway Cranes

Machine Shop.

The machine shop, or more correctly the repair shop, was located at the Whirlpool yards. In addition to its capacity for making the usual repairs to the rolling stock, the shop was also equipped with machines, forges and so forth to enable emergency repairs to be made to practically every part of the construction plant.

Maintenance and Operation.

The system was laid out by the field engineers, and constructed under

the direction of the Superintendent of Railway Construction and Maintenance. The organization of the Railway Superintendent's department has already been set forth in Chapter F, Organization. The operation and maintenance, as well as the subsequent removal of the trackage also came under the jurisdiction of the same officer.

The operation was handled after the manner of standard railway practice. The "Train Sheets", already referred to in the opening paragraph of this description of the Construction Railway, were in a wealth of detail, giving the engine number, the description of the train, class of loading, the time of passing the principal stations and much other pertinent information.

DISPOSAL AREAS.

General.

There were in all sixteen disposal areas in connection with the construction work of the Queenston-Chippawa Power Development. These areas are shown on the topographical map included herewith as page H-83 and in greater detail on the succeeding page H-84 on the map showing location of disposal areas.

Five of the areas, being those denoted by the letters L, M, N, O, and P, were used for the excavation of the Canal. The areas marked A, B, C, D, E, F, G, H, J, K and K2 were used for disposal of spoil from the Intake and the Welland River, while the area marked Q received the spoil from the site of the Power House, and will be referred to in the third part of this Chapter.

Scale of Miles

Contour Interval 25 Feet

INDEX TO DISPOSAL AREAS

- (A) Navy Island
- (B) Intake Cofferdam
- (C) Niagara River
- (D) Lidgerwood
- (E) De Witt
- (F) Welland River East of M.C.R.
- (G) Montrose
- (H) Welland River, West of Montrose Highway Bridge
- (J) Burgess'
- (K) Zielski
- (K2) Zielski
- (L) Lundys Lane
- (M) Cemetery
- (N) Whirlpool
- (O) Murray's Lane
- (P) St. David's or Main
- (Q) Queenston

MILES FROM JUNCTION OF CANAL AND WELLAND RIVER SHOWN THUS:- (4)

Based on Department of Militia and Defence Topographical Map

HYDRO-ELECTRIC INQUIRY COMMISSION

W. D. GREGORY - CHAIRMAN

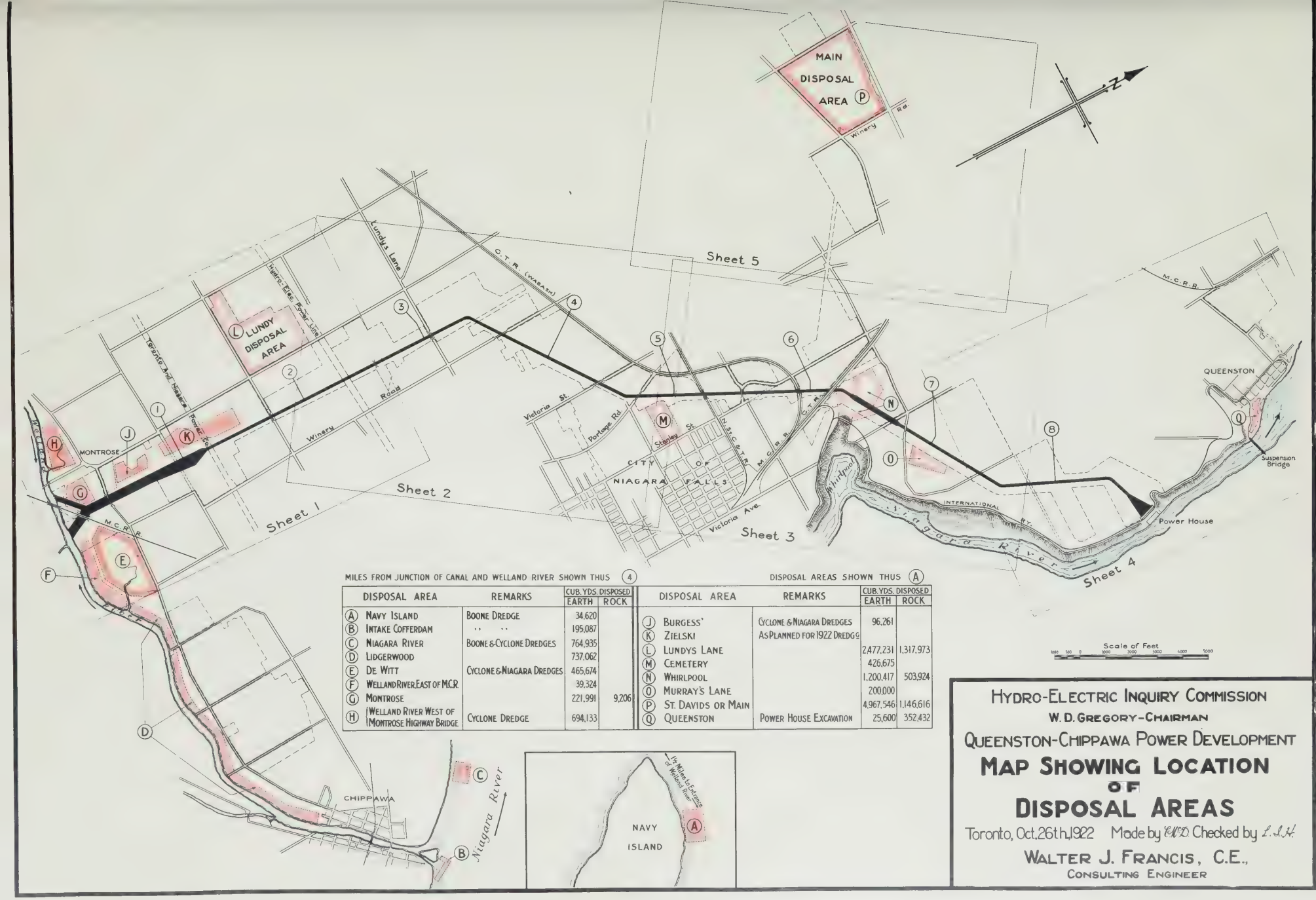
QUEENSTON-CHIPPAWA POWER DEVELOPMENT

MAP SHOWING LOCATION OF DISPOSAL AREAS

Toronto, Oct. 26th, 1922 Made by E.W.D. Checked by L.L.H.

WALTER J. FRANCIS, C.E.,

CONSULTING ENGINEER



MILES FROM JUNCTION OF CANAL AND WELLAND RIVER SHOWN THUS (4)

DISPOSAL AREAS SHOWN THUS (A)

DISPOSAL AREA	REMARKS	CUB. YDS. DISPOSED EARTH	CUB. YDS. DISPOSED ROCK
(A) Navy Island	Boone Dredge	34,620	
(B) Intake Cofferdam	" "	195,087	
(C) Niagara River	Boone & Cyclone Dredges	764,935	
(D) Lidgerwood		737,062	
(E) De Witt	Cyclone & Niagara Dredges	465,674	
(F) Welland River East of M.C.R.		39,324	
(G) Montrose		221,991	9,206
(H) Welland River West of Montrose Highway Bridge	Cyclone Dredge	694,133	
(J) Burgess'	Cyclone & Niagara Dredges	96,261	
(K) Zielski	As Planned for 1922 Dredging		
(L) Lundys Lane		2,477,231	1,317,973
(M) Cemetery		426,675	
(N) Whirlpool		1,200,417	503,924
(O) Murray's Lane		200,000	
(P) St. Davids or Main		4,967,546	1,146,616
(Q) Queenston	Power House Excavation	25,600	352,432

HYDRO-ELECTRIC INQUIRY COMMISSION

W. D. GREGORY - CHAIRMAN

QUEENSTON-CHIPPAWA POWER DEVELOPMENT

MAP SHOWING LOCATION OF DISPOSAL AREAS

Toronto, Oct. 26th, 1922 Made by W.W.D. Checked by L.L.H.

WALTER J. FRANCIS, C.E.,

CONSULTING ENGINEER

(H-84)

The area denoted K2 on the topographical map was projected as shown by the dotted line outside of the area K, but was not used.

The names and designating marks of the disposal areas used for the Canal excavation, together with the quantities deposited therein, are as follows:

Disposal Area	Cubic Yards Deposited Earth	Rock
(L) Lundys Lane	2,477,231	1,317,972
(M) Cemetery	426,675	-
(N) Whirlpool	1,200,417	503,924
(O) Murray's Lane	200,000	-
(P) St. David's or Main	4,967,546	1,145,616

The disposal area at Queenston marked Q took 25,600 cubic yards of earth and 352,432 cubic yards of rock.

Lundys Lane Disposal Area.

Lundys Lane disposal area formed part of Lots 163 - 170 of the Township of Stamford. Four tracks were carried over this area on temporary trestles from which spoil was distributed. Speaking generally, the Lundys Lane disposal area received the spoil from the southerly side of the slope of land which is crossed by the Canal near the public highway of the same name. The natural surface of the site varies from Elevation 600 to 625 and is the lowest available land in proximity to the Canal. The natural

surface at the crossing of the Canal with Lundys Lane is at Elevation 665, and the bottom of the Canal at the same point is Elevation 520.

A view of Lundys Lane disposal area is given by photograph No. H-48, being the lower picture on page H-88 hereof. The upper picture on page H-89 hereof, being photograph No. H-49, shows a train on the Lundys Lane disposal area.

Cemetery Disposal Area.

The Cemetery disposal area lies in the southeast corner of Lot 71 in the County of Stamford. In it there were deposited 426,675 cubic yards of earth, carefully levelled, and given in lieu of Cemetery property immediately to the north used for construction purposes.

Whirlpool Disposal Area.

The Whirlpool disposal area served the double purpose of disposal and permanent construction. It formed the floor and the embankments of the canal crossing over the Bowman's Gully depression. In it were placed 1,200,417 cubic yards of earth and 803,924 cubic yards of rock.

A view of the Whirlpool disposal area is given by photograph No. H-47, being the upper picture on page H-88 hereof. A second picture is included herewith as photograph No. H-46, being on page H-87 hereof.

Murray's Lane Disposal Area.

The Murray's Lane disposal area was opened as an emergency disposal, and

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To face page H-87

No. H-45

Photograph showing

General View of Recreation Disposal Area,

looking north.

Taken May 6th, 1920.

COPY

No. H-46

Photograph showing

Whirlpool Disposal Area,

looking southerly.

Taken September 6th, 1918.


210 DISPOSAL 182 Sec. 1. Gen. View Queenston Disposal. May. 6. 1920.


COLA

To face page H-88

No. H-47

Photograph showing

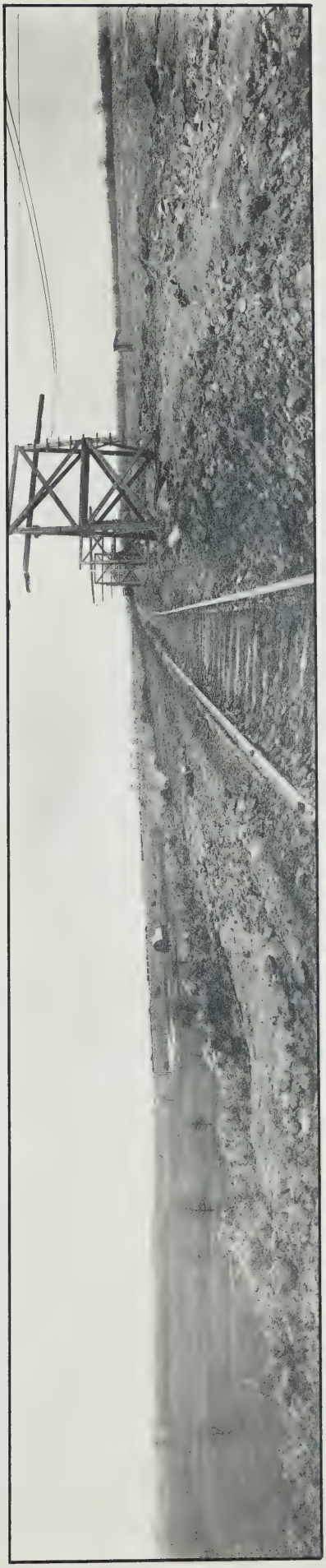
Whirlpool Disposal Area.

COPY

No. H-48

Photograph showing

Lundys Lane Disposal Area.



COPY

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To face page H-89

No. H-49

Photograph showing

Dirt Train on Lundys Lane Disposal Area.

Taken October 3rd, 1918.

COPY

No. H-50

Photograph showing

Trestle Work on Main Disposal Area.

Taken October 7th, 1920.

200,000 cubic yards of earth were deposited therein. The Whirlpool disposal area had been filled by the middle of January, 1919. Negotiations for the proposed crossing of the Grand Trunk Railway main line tracks were opened and continued for nineteen months, the crossing being finally obtained on February 20th, 1919. During the six weeks between the two above-mentioned dates, the Murray's Lane area was used.

St. David's or Main Disposal.

The St. David's or Main disposal area consisted of Lot 15 and part of Lots 626 and 14 in the County of Stamford and is located at the crest of the escarpment. The main tracks leading to it terminated in six spur tracks carried over the area on temporary unloading trestles. It received 4,967,546 cubic yards of earth and 1,146,616 cubic yards of rock. The general surface of the land lying between the main disposal area and the Canal is about Elevation 625.

A view of the Main disposal area and some of the trestlework thereon is given by photograph No. H-80, being the lower picture on page H-89 hereof.

Queenston Disposal Area.

The material from the Power House excavation, amounting to 25,600 cubic yards of earth and 352,433 cubic yards of rock, was deposited in the depression along the water's edge of the Niagara River at the place marked "Q" on the plans. Special tracks were laid over the area from which the material was unloaded and distributed.

WALTER J. FRANCIS & COMPANY.

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(H-91)

A view of the Queenston disposal area is given by photograph No. H-45, on page H-87 hereof.

Walter J. Francis

Consulting Engineer.

Toronto, March 5th, 1923.

COPY